WFIRST
Wide-Field Infrared Survey Telescope

SPC-PISCES Testbed
Update May 2017

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Plan Overview

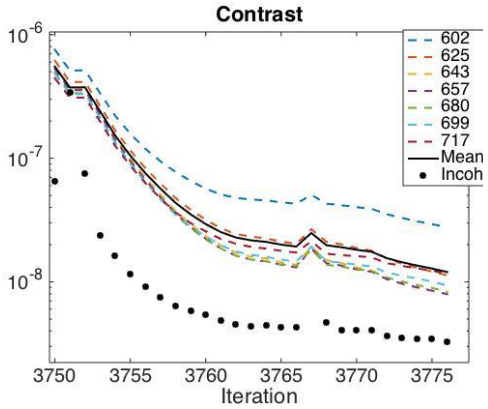
WFIRST Wide-Field Infrared Survey Telescope

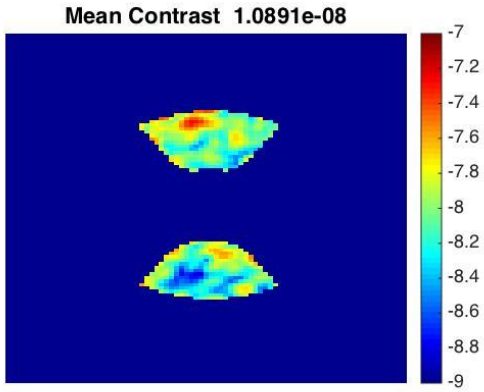
Objectives:

- Integrate PISCES to SPC Testbed at HCIT-2W
- Use PISCES with EFC for wavefront-control

Plan:

- Align PISCES at HCIT-2W
- Test PISCES spectral calibration and registration
- Test PISCES remote acquisition and data reduction Pipeline
- Perform EFC using PISCES reduction pipeline in 18% band





SPC_IFS Layout

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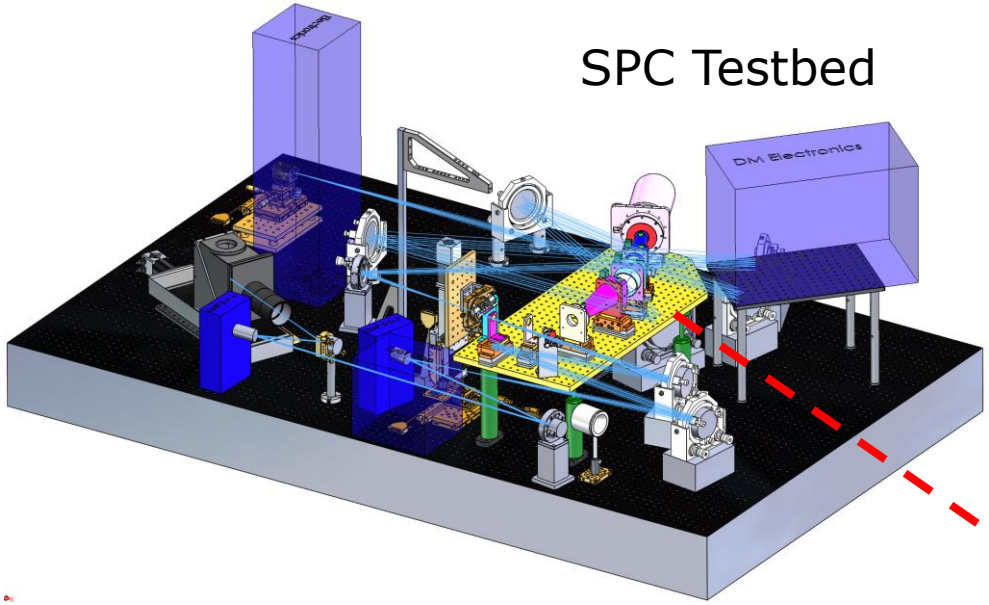
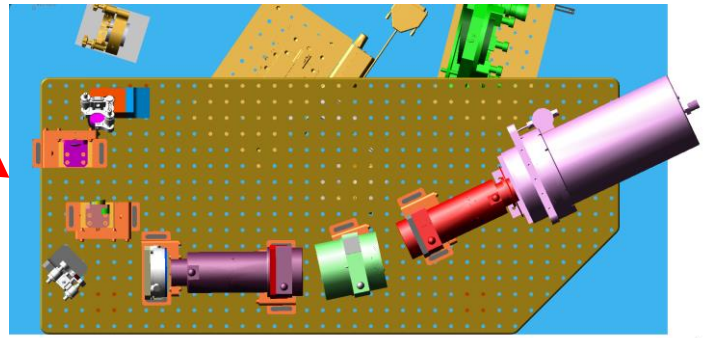
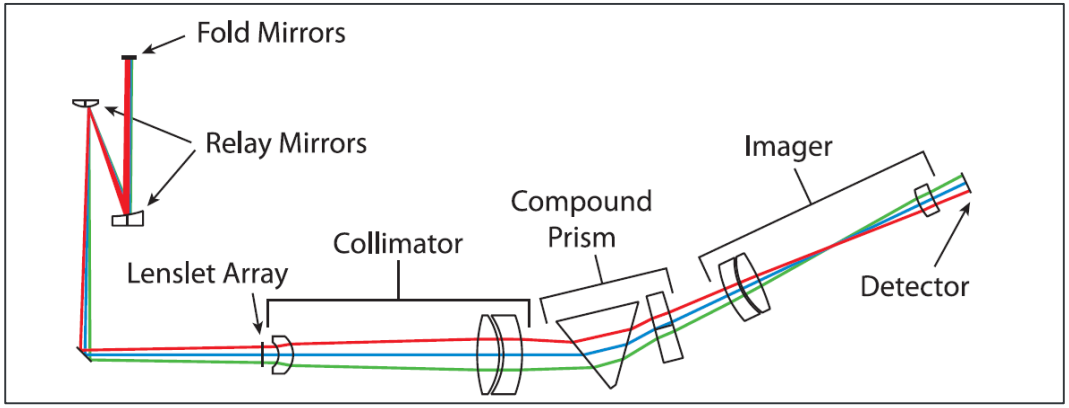
SPC Testbed

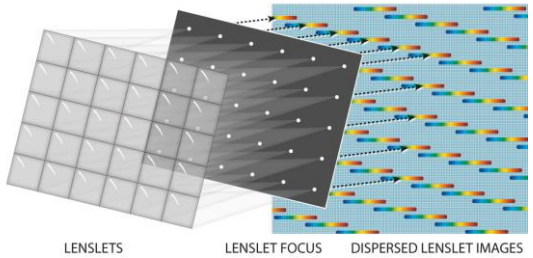


SPC Testbed- 2nd Floor

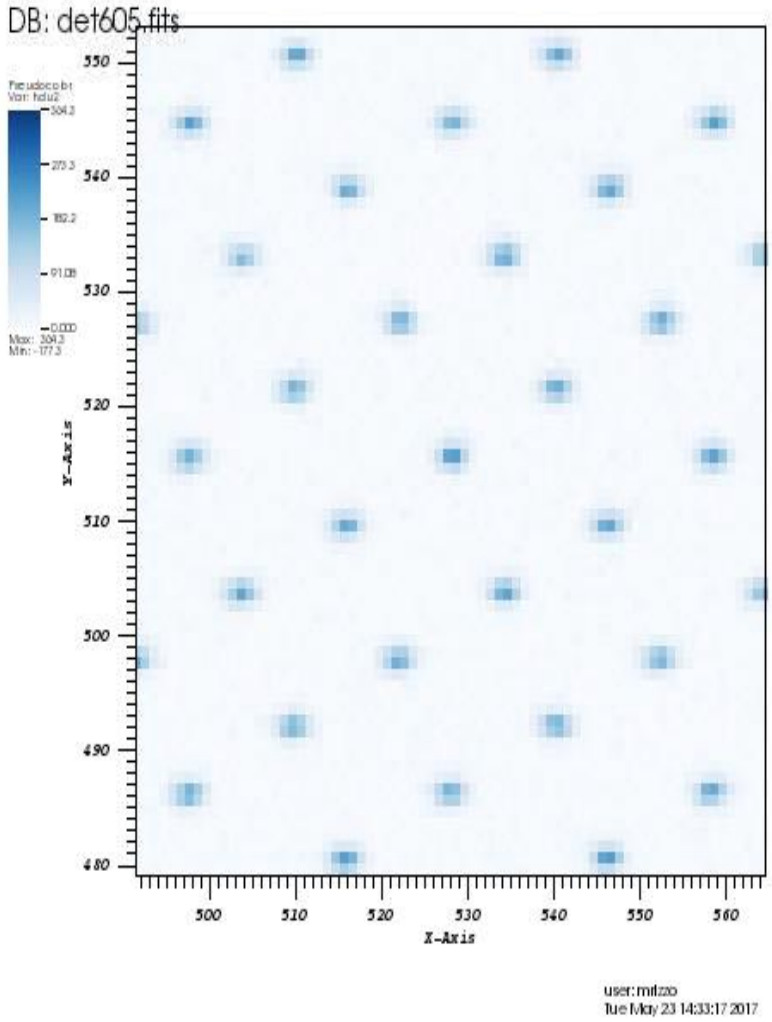


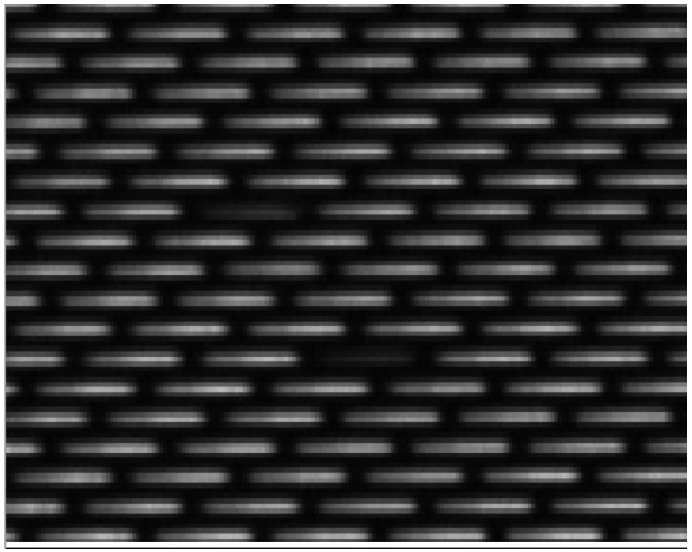
Optical Path





PISCES Microspectrum





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Testbed configuration

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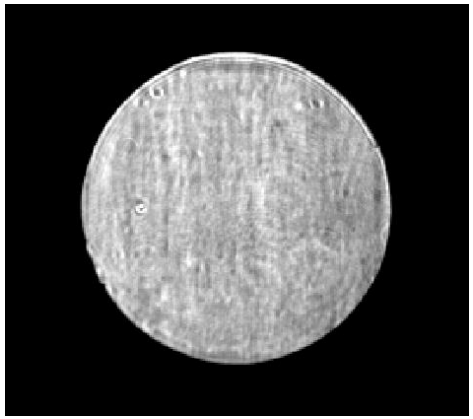
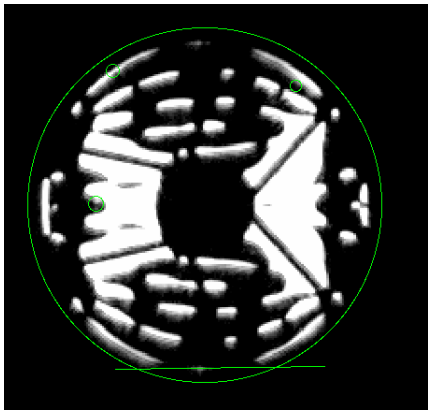
Pupil

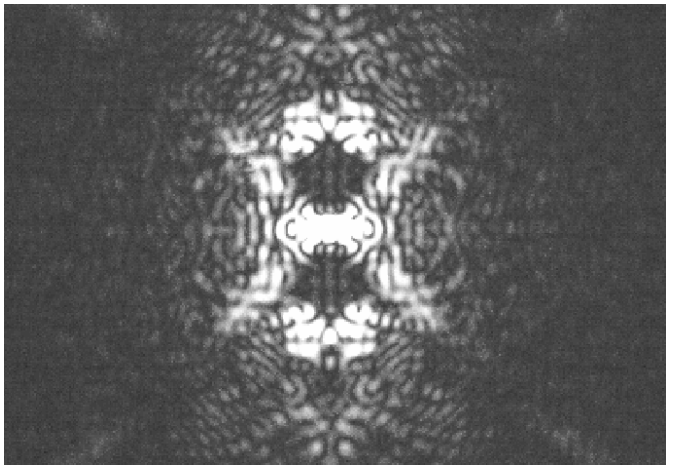


Mask



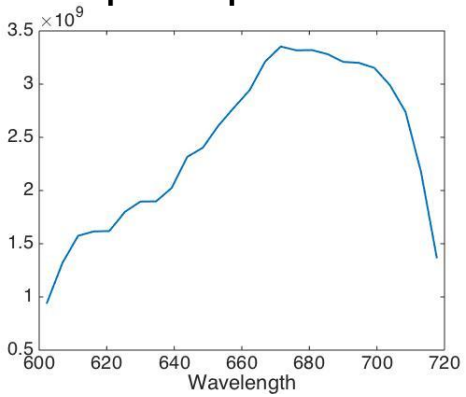
Mask + Lyot

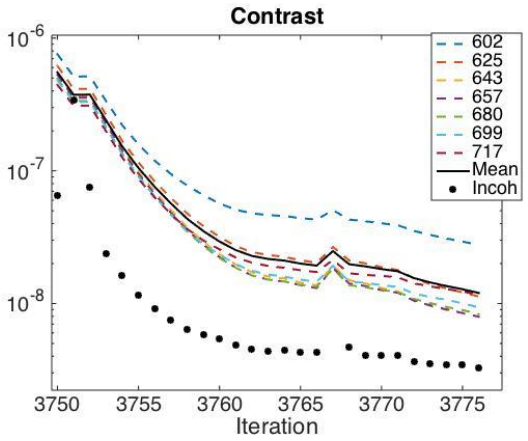
PSF

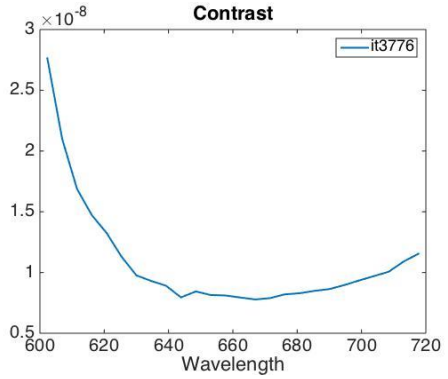


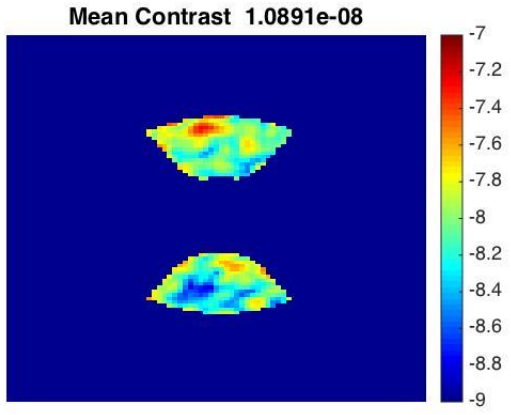
- Pupil errors are behind the SP mask.
- SP mask has small Low Order error.

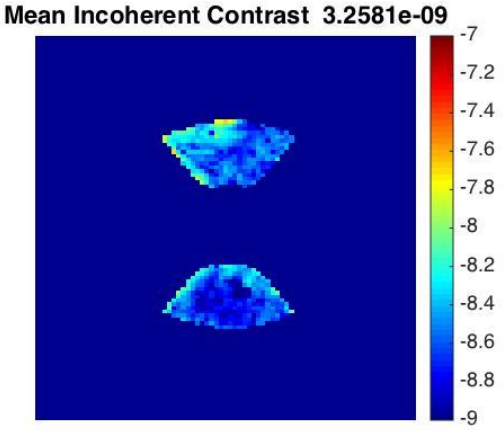
Run Broad band 18%, IFS

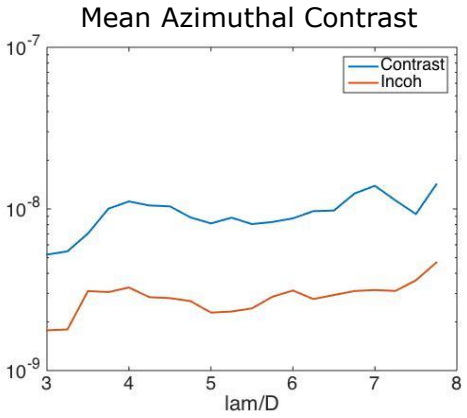






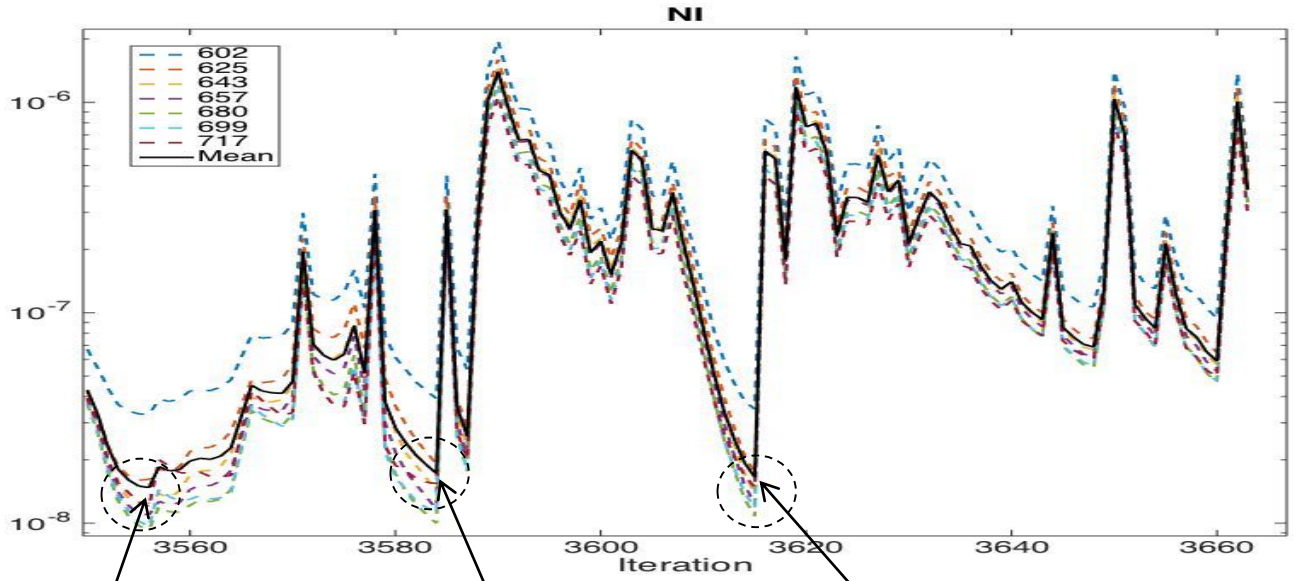


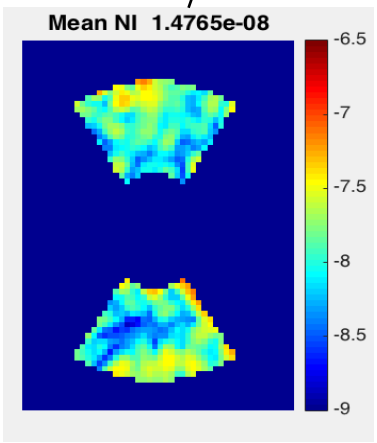


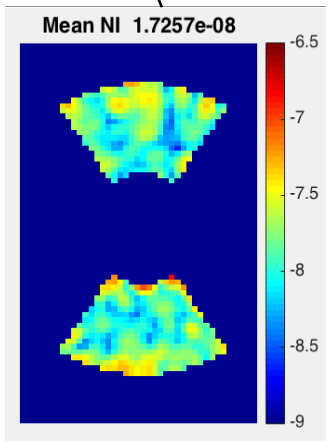


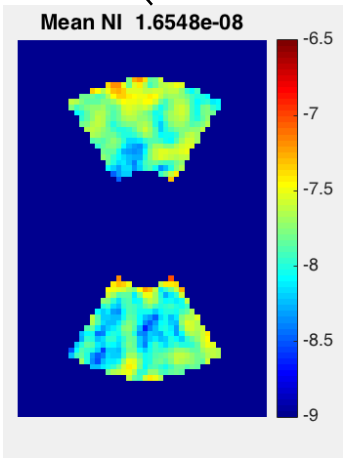
- 18% Control at 660nm
- Score: Two sides, 26 channels, 3-8 lam/D, 65^0
- Control: Two sides, 7 channels, 2.5-9.5 lam/D, 75^0
- PISCES optimal extraction

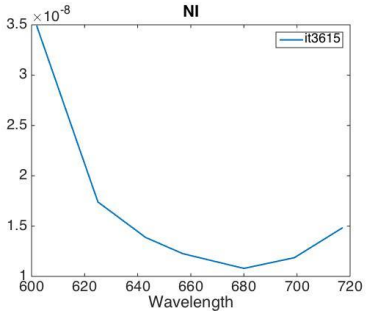
Full Run May 15, SPC_IFS







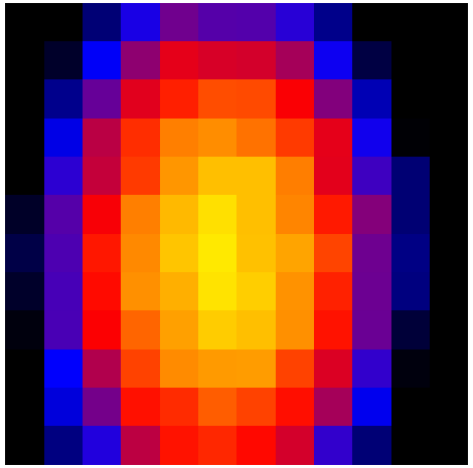




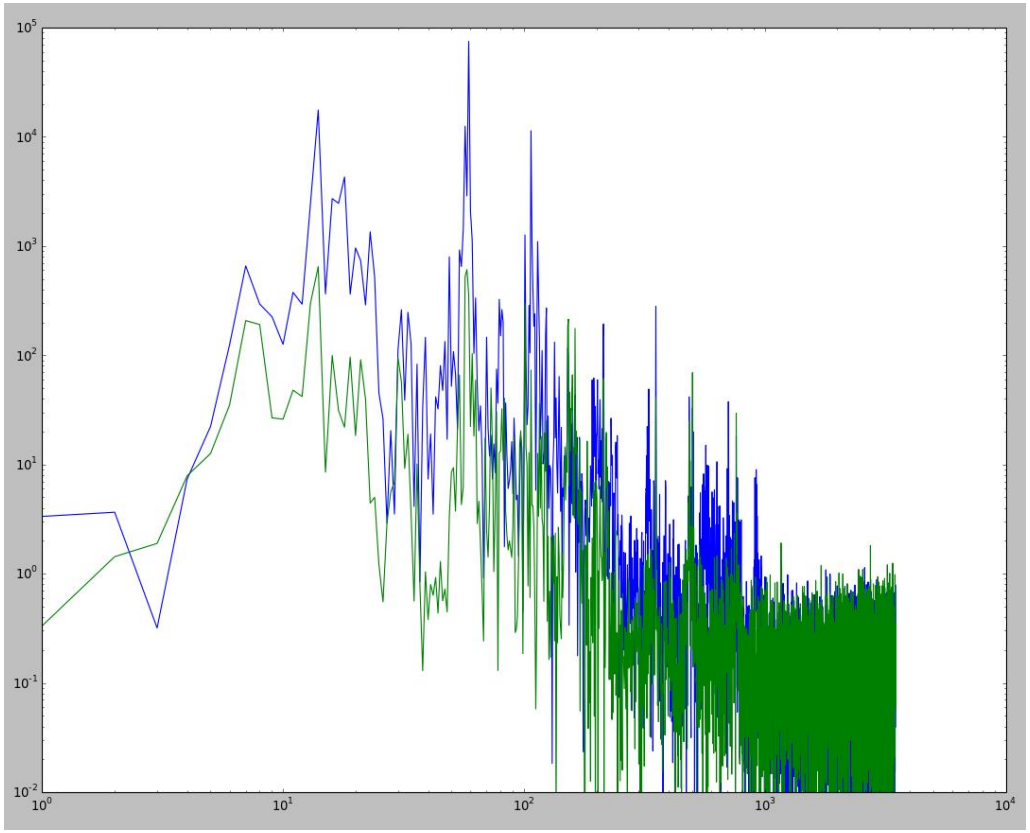
- 18% Control at 660nm

Jitter measurement

Centroid



PSD



Jitter: (0.08,0.017) pixels rms

Probe amplitude comparison

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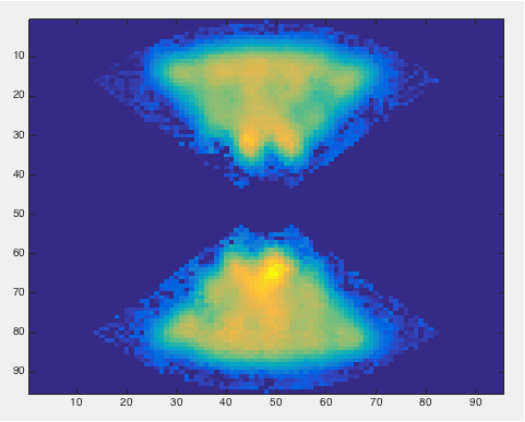
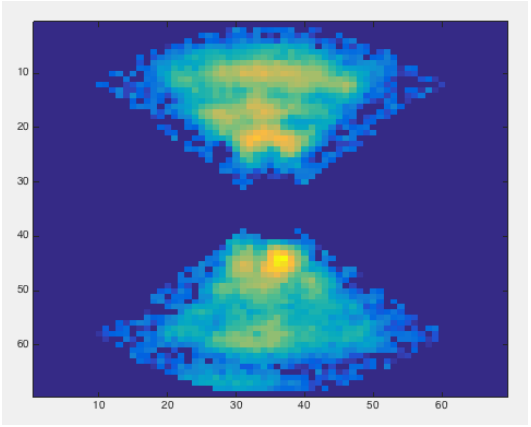
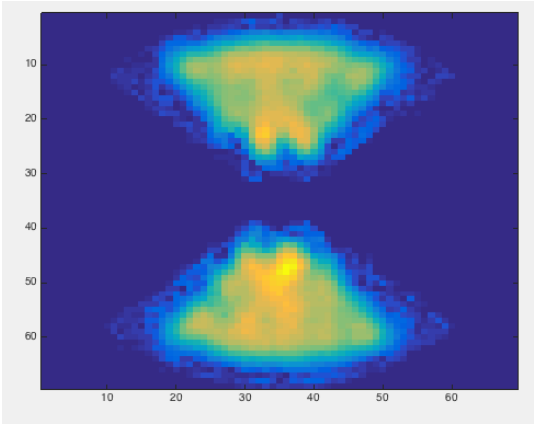
Imager



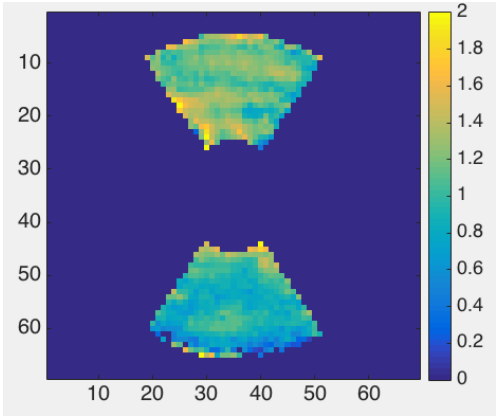
IFS

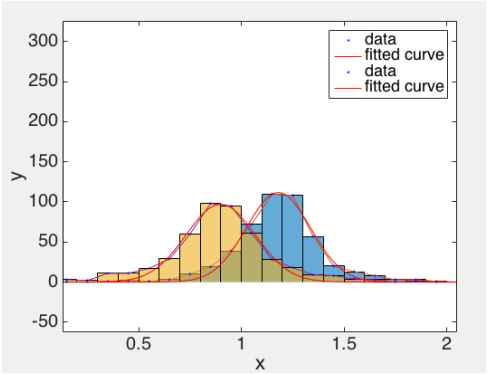


Imager IFS sampled



Ratio






```
      General model Gauss1:
      ha1(x) =  a1*exp(-((x-b1)/c1)^2)
      Coefficients (with 95% confidence bounds):
        a1 =       111.6  (105.7, 117.6)
        b1 =        1.18  (1.171, 1.19)
        c1 =      0.2207  (0.2071, 0.2344)

ha2 =

      General model Gauss1:
      ha2(x) =  a1*exp(-((x-b1)/c1)^2)
      Coefficients (with 95% confidence bounds):
        a1 =       96.95  (91.34, 102.6)
        b1 =      0.8992  (0.8879, 0.9105)
        c1 =      0.2387  (0.2227, 0.2546)

>>
```